1. **Write a Python program to check if the given number is a Disarium Number?**

**ANS:-**

**# Python program to check whether a number is Disarium**

**# or not**

**import math**

**# Method to check whether a number is disarium or not**

**def check(n) :**

**# Count digits in n.**

**count\_digits = len(str(n))**

**# Compute sum of terms like digit multiplied by**

**# power of position**

**sum = 0  # Initialize sum of terms**

**x = n**

**while (x!=0) :**

**# Get the rightmost digit**

**r = x % 10**

**# Sum the digits by powering according to**

**# the positions**

**sum = (int) (sum + math.pow(r, count\_digits))**

**count\_digits = count\_digits - 1**

**x = x//10**

**# If sum is same as number, then number is**

**if sum == n :**

**return 1**

**else :**

**return 0**

**# Driver method**

**n = 135**

**if (check(n) == 1) :**

**print ("Disarium Number")**

**else :**

**print ("Not a Disarium Number")**

**Output**

Disarium Number

1. **Write a Python program to print all disarium numbers between 1 to 100?**

**ANS:-**

**#calculateLength() will count the digits present in a number**

**def calculateLength(n):**

**length = 0;**

**while(n != 0):**

**length = length + 1;**

**n = n//10;**

**return length;**

**#sumOfDigits() will calculates the sum of digits powered with their respective position**

**def sumOfDigits(num):**

**rem = sum = 0;**

**len = calculateLength(num);**

**while(num > 0):**

**rem = num%10;**

**sum = sum + (rem\*\*len);**

**num = num//10;**

**len = len - 1;**

**return sum;**

**result = 0;**

**#Displays all disarium numbers between 1 and 100**

**print("Disarium numbers between 1 and 100 are");**

**for i in range(1, 101):**

**result = sumOfDigits(i);**

**if(result == i):**

**print(i),**

**Output:**

**Disarium numbers between 1 and 100 are**

**1 2 3 4 5 6 7 8 9 89**

1. **Write a Python program to check if the given number is Happy Number?**

**ANS:-**

1. **#isHappyNumber() will determine whether a number is happy or not**
2. **def isHappyNumber(num):**
3. **rem = sum = 0;**
5. **#Calculates the sum of squares of digits**
6. **while(num > 0):**
7. **rem = num%10;**
8. **sum = sum + (rem\*rem);**
9. **num = num//10;**
10. **return sum;**
12. **num = 82;**
13. **result = num;**
15. **while(result != 1 and result != 4):**
16. **result = isHappyNumber(result);**
18. **#Happy number always ends with 1**
19. **if(result == 1):**
20. **print(str(num) + " is a happy number");**
21. **#Unhappy number ends in a cycle of repeating numbers which contain 4**
22. **elif(result == 4):**
23. **print(str(num) + " is not a happy number");**

**Output:**

**82 is a happy number**

1. **Write a Python program to print all happy numbers between 1 and 100?**

**ANS:-**

**#isHappyNumber() will determine whether a number is happy or not**

**def isHappyNumber(num):**

**rem = sum = 0;**

**#Calculates the sum of squares of digits**

**while(num > 0):**

**rem = num%10;**

**sum = sum + (rem\*rem);**

**num = num//10;**

**return sum;**

**#Displays all happy numbers between 1 and 100**

**print("List of happy numbers between 1 and 100: ");**

**for i in range(1, 101):**

**result = i;**

**#Happy number always ends with 1 and**

**#unhappy number ends in a cycle of repeating numbers**

**#which contains 4**

**while(result != 1 and result != 4):**

**result = isHappyNumber(result);**

**if(result == 1):**

**print(i),**

**print(" "),**

**Output:**

**List of happy numbers between 1 and 100:**

**1 7 10 13 19 23 28 31 32 44 49 68 70 79 82 86 91 94 97 100**

1. **Write a Python program to determine whether the given number is a Harshad Number?**

**ANS:-**

**num = 156;**

**rem = sum = 0;**

**#Make a copy of num and store it in variable n**

**n = num;**

**#Calculates sum of digits**

**while(num > 0):**

**rem = num%10;**

**sum = sum + rem;**

**num = num//10;**

**#Checks whether the number is divisible by the sum of digits**

**if(n%sum == 0):**

**print(str(n) + " is a harshad number");**

**else:**

**print(str(n) + " is not a harshad number");**

**Output:**

**156 is a harshad number**

1. **Write a Python program to print all pronic numbers between 1 and 100?**

**ANS:-**

**def solve(n):**

**for i in range(1, n + 1):**

**if i \* (i + 1) <= n:**

**print(i \* (i + 1), end=" ")**

**print("Pronic Numbers Between 1 and 100:")**

**solve(100)**

**Output**

Pronic Numbers Between 1 and 100:

2 6 12 20 30 42 56 72 90